

Amendments to the Claims:

Please enter the following amendments and cancellations without prejudice or disclaimer.
This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-138. (cancelled)

139. (new) A datastructure comprising:

- a) genetic information that describes a plurality of genetic markers on at least two different, non-homologous chromosomes of a subject; and
- b) a systems biology map of the subject, wherein the map comprises a matrix of information about neural circuit function in the brain, the matrix including functional information obtained during a mental process of a subject, the matrix including a first dimension that identifies regions of the brain, and one or more values for each region, wherein the datastructure associates genetic information with the system biology map for the subject.

140. (new) The datastructure of claim 139, wherein the systems biology map comprises information about activity in a plurality of brain regions during at least one paradigm.

141. (new) The datastructure of claim 140, wherein the systems biology map comprises information about activity in a plurality of brain regions during at least two paradigms.

142. (new) The datastructure of claim 140, wherein the paradigm interacts with a reward/aversion mechanism in a normal subject.

143. (new) The datastructure of claim 139, wherein the systems biology map comprises a plurality of matrices, each matrix comprising information about neural activity in a plurality of defined brain regions during different paradigms.

144. (new) A database comprising a plurality of records, wherein each record of the plurality comprises a datastructure according to claim 1.

145. (new) A method of evaluating subjects using functional information about brain activity, the method comprising:

providing a database that comprises functional information about brain activity for each of a plurality of subjects; and

classifying the subjects based on the functional information, to thereby evaluate one or more of the subjects.

146. (new) The method of claim 145, wherein the classifying comprises selecting a subset of variables selected based on information content of each of the variables, and sorting the subjects as a function of the variables of the subset.

147. (new) The method of claim 145, wherein the classifying comprises selecting a subset of variables selected based on correlations among the variables, and sorting the subjects as a function of the variables of the subset.

148. (new) The method of claim 145, wherein each variable is associated with an activity of a particular region of the brain during a paradigm.

149. (new) The method of claim 145, wherein the classifying comprises generating a binary tree, wherein each node of the tree corresponds to a variable associated with a particular region of the brain and a paradigm.

150. (new) The method of claim 145, wherein the classifying is recursive.

151. (new) The method of claim 145, wherein the classifying comprises generating a non-parametric association rule algorithm.

152. (new) A method comprising:
providing a database that comprises quantitative information about brain function for each of a plurality of subjects; and
objectively identifying a subset of subjects from the plurality of subjects according to similarity of brain function.

153. (new) The method of claim 152, wherein the identifying comprises generating one or more association rules that model the subset.

154. (new) The method of claim 152, wherein the identifying comprises generating a decision tree that models the subset.

155. (new) The method of claim 152, wherein the identifying comprises generating a probability function that models the subset.

156. (new) The method of claim 152, wherein the database comprises at least one systems biology map that comprises values determined by evaluating subjects during at least two different mental processes.

157. (new) A datastructure comprising:
a systems biology map of a subject wherein the map comprises quantitative information about neural circuit function in the brain, the information indicating function of a plurality of regions of the brain during a plurality of mental processes.

158. (new) A method of providing a systems biology map, the method comprising:
providing native datasets of brain function for a plurality of subjects during a mental
process, the information comprising quantitative data for signals in at least a plurality of brain
regions;
combining information from the native datasets to provide an aggregate dataset; and
localizing regions of activity in the aggregate dataset.